

## CLAIMS

- 1 1. Composite sample support for the mass spectrometric analysis of samples with  
2 ionization by matrix-assisted laser desorption, comprising  
3 (a) a mechanically very stable substructure manufactured to a high level of  
4 precision and  
5 (b) a removable, relatively thin plastic cover of uniform thickness to take up  
6 the samples.
- 1 2. Composite sample support according to Claim 1 wherein the substructure can be  
2 used again by removing the plastic cover, whereas the plastic cover is usually  
3 used only once.
- 1 3. Composite sample support according to Claim 1 wherein the plastic cover is  
2 fastened to the substructure by special fastening elements.
- 1 4. Composite sample support according to Claim 1 wherein the substructure is  
2 provided with fastening elements which are used to fasten the plastic cover.
- 1 5. Composite sample support according to Claim 1 wherein the plastic cover has  
2 fastening elements which are used to fasten the plastic cover to the substructure.
- 1 6. Composite sample support according to Claim 5 wherein the plastic cover has a  
2 continuous or interrupted edge strip which is used to fasten the edge around the  
3 surface of the substructure and is anchored into a groove on the front.
- 1 7. Composite sample support according to Claim 1 wherein the plastic cover is  
2 slightly concave so that it lies flush on the surface of the substructure after being  
3 pressed down and secured by the fastening elements.
- 1 8. Composite sample support according to Claim 1 wherein the substructure has  
2 pump channels leading to the surface which ease evacuation of the space  
3 between the substructure and the plastic cover.
- 1 9. Composite sample support according to Claim 1 wherein the substructure carries  
2 a machine-readable identifier.

- 1 10. Composite sample support according to Claim 9 wherein the identifier consists of  
2 an optical code.
- 1 11. Composite sample support according to Claim 9 wherein the identifier is stored in  
2 a transponder.
- 1 12. Composite sample support according to Claim 11 wherein part of the identifier in  
2 the transponder contains a permanent code which identifies the sample support  
3 and a code which can be overwritten and which may contain data relating to the  
4 sample support, the current cover, the processing status of the samples on the  
5 sample support, and the files containing data for the process control of the  
6 analytical methods relating to the samples.
- 1 13. Composite sample support according to Claim 1 wherein the plastic cover carries  
2 a machine-readable identifier.
- 1 14. Composite sample support according to Claim 1 wherein the substructure  
2 contains holes or grooves on the side to enable the robot to grip the substructure.
- 1 15. Composite sample support according to Claim 1 wherein the plastic cover cannot  
2 be used again after it has been removed.
- 1 16. Composite sample support according to Claim 1 wherein the outer shape of the  
2 composite sample support has the same outer dimensions as a microtitre plate.
- 1 17. Composite sample support according to Claim 1 wherein the plastic cover is  
2 made from an electrically conductive material.
- 1 18. Composite sample support according to Claim 1 wherein the surface of the  
2 plastic cover is metallized.
- 1 19. Composite sample support according to Claim 1 wherein the plastic cover has a  
2 hydrophobic surface.

- 1 20. Composite sample support according to Claim 1 wherein the plastic cover has a  
2 grid of anchor sites, each being more hydrophilic than the surrounding  
3 hydrophobic field.
- 1 21. Composite sample support according to Claim 20 wherein the anchor sites  
2 consist of a pre-prepared matrix substance.
- 1 22. Composite sample support according to Claim 20 wherein the plastic cover  
2 contains optically recognizable markers which are located at fixed distances from  
3 the anchors.
- 1 23. Composite sample support according to Claim 1 wherein the sample sites on the  
2 plastic cover are pre-prepared and coated with a matrix substance.
- 1 24. Composite sample support according to Claim 1 wherein sites on the plastic  
2 cover consist of chemically functionalized groups.
- 1 25. Composite sample support according to Claim 1 wherein the substructure  
2 contains structures for fitting auxiliary means for removing the plastic cover.